CHARGE NUMBER: Various

PROGRAM TITLE: Analytical Investigations

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I. PYROLYSIS OF TOBACCO

The FTS-14 infrared spectrometer was employed to monitor gases generated by heating tobacco from ambient to 1000°C. The IR spectra were recorded every 10°C. The spectra revealed qualitative as well as quantitative changes in the gaseous components. The CO and CO_2 concentration profiles from this work correlated well with data obtained previously. The concentration profiles were recorded also for methane, ethylene, methanol, ammonia, and isoprene.

The latter was studied also using hexane extracted and non-extracted tobaccos. The preliminary data indicated that the isoprene concentration at 350°C decreased sharply when hexane extracted tobacco was used.

II. TOTAL AMINO ACIDS IN TOBACCO

A literature method utilizing the reaction of dinitrofluorobenzene with amino acids is being automated on the Robot Chemist. Aspartic acid is being used as a standard, proline having a 30% greater response and asparagine a 40% lower response when all are 100 ppm alone in a standard solution. Development of this method would give us the capacity to estimate total amino acids by a rapid colorimetric procedure.

III. ALDEHYDES AND NITRILES

Ratios of TPM cyanide to gas phase cyanide has been determined for the following tobaccos:

M #16	0.52
All burley	0.67
All bright	0.58
All Turkish	0.34
Kentucky Reference	0.50

IV. SIDESTREAM NICOTINE AND PHENOLS

Smoking and collection procedures have been optimized and data collected on M#16. The "chimney" designed by R. Hale is being used and SS collected on a Cambridge pad followed by an acid trap. A second base trap has been eliminated because it was found that only 2% of the total SS phenol went through the first trap. An aliquot of the collection trap can also be used for SS ammonia analysis. Results will be reported as SS/MS ratios.

V. SMOKE COMPONENT SEPARATION

Several capillary columns have been prepared for use in smoke component separation. Column efficiency is good for the gas phase and volatile portions of smoke. Experiments with sample introduction systems indicates the Tenax trap (Ref. A. Zlatkis) to be an efficient means of concentrating smoke components.

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